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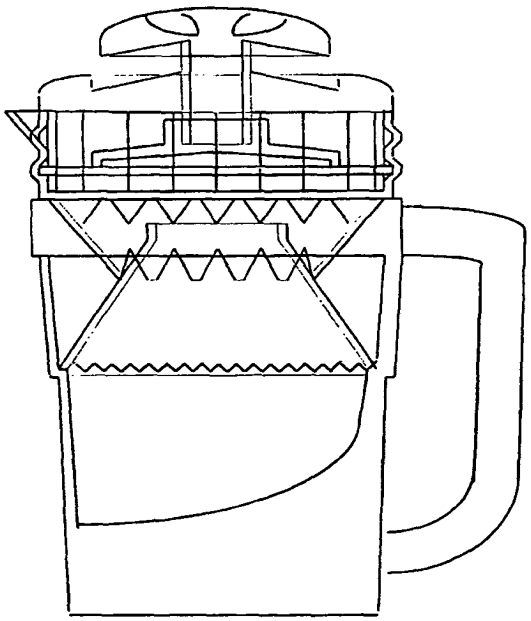
(54) Title: MICROWAVE MULTIBOILER DEVICE



(57) Abstract: The present invention, constituted by only one (1) final element, composed by a set of six (6) parts which couple themselves and juxtapose themselves, is intended to multiple use in microwave oven, in order to boil coffee with water and soluble coffee powder or cappuccino powder; or boil pure milk or with complement, such as chocolate; or make tea, with water and free herbs, and was conceived in order that, in addition to reach the final product boiled for consumption, it may be possible, for a better sterilization, or obtainment of a better taste, exceed the initial boil point of these liquids and their boil remain through recycling, internally, in the device, for a determinate average time, without any spillage of liquid from the pot inside the microwave oven, except the outlet of normal water evaporation, the same element being further conceived to serve the content, ready, up to the table. The present invention further enables the soluble coffee to reach an excellent and unequaled taste point, since it is boiled together with water; that milk, since it is well-boiled, is much better sterilized, thereby having an extreme importance, in nursing bottles, such as tea, that reaches its maximum taste with herbs being more accurately boiled and sterilized.

WO 01/30217 A1

MICROWAVE MULTIBOILER DEVICE

The present invention consists of a multiuse boiling device, with a cover to cause soluble powder coffee to boil, boil milk or tea without spillage, in a microwave oven and further serve up a meal with original conception, in view of its efficient use.

The invention is a novelty, and no similar invention, either domestic or foreign for use in microwave oven is known.

As it is known, when soluble powder coffee is mixed to water and then placed to boil, in reaching boiling point the liquid begins to boil and increases its volume, thereby forming gaseous bubbles which rise within the pot until pouring liquid part out of it.

Likewise, it happens with soluble coffee mixed to milk (*cappuccino*), or when pure or chocolate milk is boiled, for example, or even with water mixed to tea herbs.

Such a fact causes people not to use practicability of microwave oven, with conventional pots, to control liquid spillage within it after beginning of boil, such an obstacle being not overcame as yet.

For lack of a solution for such an obstacle, everybody has to fit this condition, as the case of instructions that teach us to make soluble coffee by throwing the powder in a cup with boiling water or vice versa, since it is impossible to boil water together with powder without spillage. Moreover, nobody can leave milk boiling without resulting in spillage; then, the impossibility of being best sterilized for human consumption. Likewise, when in some cases water with tea herb cannot be boiled for more time without spilling.

The present invention solves such problems, thereby allowing to make coffee in microwave oven, by boiling water mixed with soluble coffee powder or even adding with milk (*cappuccino*), for the time stipulated, without spillage; moreover, pure or chocolate milk, for example, can be boiled by holding it boiling up to 2 minutes without spilling; also, water with tea herbs can also be boiled at the time desired; all without any liquid pouring out the boiling equipment, thereby causing coffee to reach an excellent and unequaled taste point, since it is boiled together with water; that well-boiled milk is much better sterilized, and can be highly important, in addition to common use, to be used in nursing bottles and child alimentation; and that tea, also due to the longer time of boil, obtains the maximum taste from boiled herbs due to its purity and better liquid sterilization.

For a better understanding of the present invention, we will describe now in detail with illustrative figures, in item I, both materials and parts to be used; and in item II, the description of its operation.

I - DESCRIPTION OF MATERIAL AND PARTS USED:

MATERIALS: For manufacturing of parts which will be described below, it will be used microwave oven-resistant materials, which constitute basically in a suitable boron-silicate glass or similar, proper glass, more resistant to temperature shock; and plastic, with emphasis being given to polyethylene, of proper quality for microwave and food, for internal parts of the device.

PARTS (numbered as FIGURES, in 1:1 scale):

GLASS POT - FIGURE 1 (Cross-Section): Jar-shaped cylindrical glass pot, with nose (1) in the upper part, having a lower diameter in bottom part (2) up to the middle and, from this point, of a large diameter in the upper part (3) in 5mm, thereby forming a projection (4) by the middle, in the border of diameters, for supporting the part called BOIL RECYCLING CONE - Figure 3 (Cross-section) further containing, in the upper part, two internal recesses around it, with 7mm wide, which form external projections around the cylinder, the bottom one (5) serving to fasten internally the COVER SUPPORT (Figure 2.2), and the upper one (6) being for better directioning liquid toward the nose (1);

COVER ASSEMBLY - FIGURE 2 (Opened Cover Position - cross-section): it is formed by plastic parts, **COVER** - Figure 2.1 (cross-section) and 2.11 (cross-section - top view); **COVER SUPPORT** - Figure 2.2 (cross-section) and 2.2.1 (cross-section - top view), and **BOIL TRIMMER** - Figure 2.3 (cross-section) and 2.3.1 (cross-section - top view), whose assembly is mounted, by threading the COVER (Figure 2.1), which contains a gripper in the upper part (7) in order to rotate it, and the lower cylindrical extension with external thread (8) which cross the COVER SUPPORT (Figure 2.2) by the middle part, threading it (9), and then it is fastened by the end (10) in the BOIL TRIMMER (Figure 2.3); and the COVER SUPPORT (Figure 2.2) contains a thread in central internal part (9) and around this center it is hollowed up for steam passage 11), its side wall, which is supported in the glass, being divided by vertical cuts (12) in sections (13), where some of them contain liquid passage constituted by larger holes (28) and smaller holes (29), and projection around (14) which will fit the recess (5) of the GLASS POT (Figure 1) to be fastened to the same; and the BOIL TRIMMER (Figures 2.3 and 2.3.1) has a circular recess located in the upper side (10) to receive in a threaded manner, the COVER cylinder (Figure 2.1) and from the bottom side, it has a spherical shield (15) to receive and repel steam boiling jets;

BOIL RECYCLING CONE - FIGURE 3 (Cross-Section): a cone for rise of boil and recycling of boiling liquids, composed of a sole part

in plastic formed by cones united and joined in reverse manner (Figure 3.1 and 3.2) and that, along its larger diameter ends, which are equal to the glass pot inner diameter, "V" cuts (16) may be found or alternatively in "U", in order to facilitate steam and liquid passage, and by its sides (17) the liquid returns to bottom;

GLASS PROTECTION WITH HANDLE - Figure 4 (Cross-section): constituted of a sole part in plastic (18) with handle (18) which involves and protects the GLASS POT (Figure 1) against external thermal shocks, having internally the external format of that pot in order to fit it, it being able to, alternatively, be separated by fits in intersection points (19) of the handle (18);

II - HOW THE INVENTION OPERATES:

One catches the GLASS POT - Figure 1 and fits it in the part of GLASS PROTECTION WITH HANDLE - Figure 4, thereby forming ASSEMBLY 1 - Figure 5 (cross-section). Then, water is placed with soluble powder coffee or *cappuccino* powder in order to make coffee; or water with free herbs to make tea; or pure milk or with complement to boil, the amount of liquid (20) of any of them being limited up to the maximum level allowed (19), as indicated in ASSEMBLY I - Figure 5 (cross-section), which matches projection (4) of GLASS POT - Figure 1. Then, it should be placed the BOIL RECYCLING CONE - Figure 3 in ASSEMBLY I - Figure 5, thereby forming ASSEMBLY II - Figure 6 (cross-section). Finally, ASSEMBLY II - Figure 6 is closed with COVER ASSEMBLY - Figure 2, the COVER (Figure 2.1) being left in open position and, thus, the MULTIBOILER DEVICE - Figure 7 is ready for use.

One takes the MULTIBOILER DEVICE - Figure 7 should be taken to the inner part of the microwave oven and, according to the liquid to be boiled and the temperature of liquid (natural or chilled, for example), time is scheduled and the oven is switched on, it being agreed that, in the present demonstration, the temperature of liquid is natural, and the temperature of the microwave oven is the ordinary maximum.

It should be taken into consideration that every boil procedure may be followed through the microwave oven glass closing cover, which thus allows to see what is occurring inside the glass pot.

And what will occur, as it can be seen in OPERATION OF DEVICE - Figure 8, is that, with microwave action, boil starts with the liquid (20) within the glass pot warming up to boiling point, which causes it to rise directioned inside the cone (21) until knocking the shield part (22), which catches and repels foam-liquid jets downwards,

where, by running through cone sides (23) return to the bottom, in order to restart, at that point, with boil in progress, the same cycle again.

Only water steam (24) rises at all sides, being expelled through the semi-opened cover (25), thereby preventing formation of internal excessive pressure.

After elapsing the ideal period of time to coffee becomes ready, which coincides with a little more than the beginning of boil which occurs just above 1 minute; or after beginning of milk boil, which may remain boiling without spilling, even for *more than 2 minutes* (*a time which is more than sufficient for full sterilization*); or after tea boil, which also can remain boiling for the additional time as desired, *any of these products will be ready to consume, without any internal spillage in the microwave oven.*

Then, it will be possible, as it can be seen in the DEVICE IN POSITION TO SERVE UP A MEAL - Figure 9, to remove or not (as desired) the Boil Recycling Cone, close the Cover (26) and rotate the Cover Support until matching the *perforated section of liquids with the nose (27) of glass pot. Then, with the same pot, which has a suitable presentation, one can serve up a meal* and, thus, the demonstration of the entire original and efficient operation is ended, as well as the use of the present invention.

Other uses, such as simply boiling water or sterilizing any things with boiling water, are not necessarily part of the present invention, however they constitute clear additions to its use.

It should be further added that, by following proportions of component sizes of the present invention, it will operate with any size, including, for example, with enlargement of device in horizontal direction, without increasing its height, which will allow a larger capacity in milliliters of liquid to boil.

Finally, it should be further explained that this same invention may also be used directly to fire, since its parts may be produced in aluminum or stainless steel, for example, or with other fire-resistant materials, in this case, the part GLASS PROTECTION WITH HANDLE - Figure 4 being unnecessary, since the handle may leave directly from the body of pot of the same format as that of Figure 1.

Thus, if produced for use in stove or brazier fire, it may appear to have partial similarity with two milk pots conceived to continue the process of milk boil, *but these, due to their conception, may not be used in microwaves.*

It happens that the first similar model as it is known uses a cone which has three perforations in its base edges, by which it is fastened

to a distance of 25% of milk pot base and the upper end of the cone, having a quite narrow mouth, remains at the same level as that of upper mouth of the milk pot, which impedes to close it with the cover when in boil, since milk jet **exceeds upwards the level of milk pot mouth, as a fountain**, from where it returns and, *for that reason, it would be impracticable to use it in microwave oven, since the* **boil is performed in the outside pert of the pot, without cover**.

The second similar model operates in a conventional pan as well, with milk pot now, with the form of a pressure pan and with cover. Such a cover, in turn, has a format equal to the upper part of a flying-saucer, that is, it is waved from its base until its top, thereby forming steps, the one of smallest diameter being that of top. It has a central outlet for boiling liquid, which leaves that point and goes flowing outside the cover and going down until returning to the inner part of the pan, which, in addition to be an improper way, since it soils outside of the milk cover, and also impedes the use thereof in microwave oven.

Thus, it can be perceived, when compared with these two *partial similarities as known* (since they are of restrict use to fire and only for use in milk boil, since it treats of *milk pots*), that the present invention innovates too much, since the boil is performed and recycled within the multiboiler pot, covered, it being conceived **for use in microwave oven,** for also **serving up a meal, its use being further extensive, provided that it may be produced with other materials, also for use directly to fire.**

CLAIMS

1°) **MICROWAVE MULTIBOILER DEVICE** - Figure 10 (Cross-section - scale= 1:1) 1.1) characterized for composing 1 final element comprising: a) a JAR-SHAPED CYLINDRICAL GLASS POT - Figure 1, (cross-section), with nose (1) in the upper part, having a lower diameter in bottom part (2) and a larger diameter in the upper part (3), thereby forming a projection (4) by the middle, in the border of diameters, for supporting the part called BOIL RECYCLING CONE - Figure 3 (Cross-section) further containing, in the upper part, two internal recesses around it, the bottom one (5) to fasten the COVER SUPPORT (Figure 2.2); and the upper one (6) to better direction liquid towards the nose (1); b) **COVER ASSEMBLY** - Figure 2 (Opened Cover Position - cross-section) which is formed by plastic parts, **COVER** - Figure 2.1 (cross-section) and 2.11 (cross-section - top view); **COVER SUPPORT** - Figure 2.2 (cross-section) and 2.2.1 (cross-section - top view), and **BOIL TRIMMER** - Figure 2.3 (cross-section) and 2.3.1 (cross-section - top view), whose assembly is mounted, by threading the COVER (Figure 2.1), which contains a gripper in the upper part (7) in order to rotate it, and a lower cylindrical extension with external thread (8) which cross the COVER SUPPORT (Figure 2.2) by the middle part, threading it (9), and then it is fastened by the end (10) in the BOIL TRIMMER (Figure 2.3); and the COVER SUPPORT (Figure 2.2) contains a thread in central internal part (9) and around this center it is hollow up for steam passage 11), it being its side wall, which is supported in the glass, divided by vertical cuts (12) in sections (13), where some of them contain liquid passage constituted by larger holes (28) and smaller holes (29), and projection around (14) which will fit the recess (5) of the GLASS POT (Figure 1) to be fastened to the same; and the BOIL TRIMMER (Figures 2.3 and 2.3.1) has a circular recess located in the upper side (10) to receive in a threaded manner, the COVER cylinder (Figure 2.1) and from the bottom side, it has a spherical shield (15) to receive and repel steam boiling jets; c) **BOIL RECYCLING CONE** - Figure 3 (Cross-Section): a cone for rise of boil and recycling of boiling liquids, composed of a sole part in plastic formed by cones united and joined in reverse manner (Figure 3.1 and 3.2) and that, along its larger diameter ends, which are equal to the glass pot inner diameter, "V" cuts (16) may be found or alternatively in "U", in order to facilitate steam and liquid passage, and by its sides (17) the liquid returns to bottom; and d) **GLASS PROTECTION WITH HANDLE** - Figure 4 (Cross-section): constituted of a sole part in plastic (18) with handle (18) which involves and protects the GLASS POT

(Figure 1) against external thermal shocks and, in order to fit, it has internally the format of that pot, be separated by fits in intersection points (19) of the handle (18); it also protects hand catching the touch handle in hot glass.

2°) **MICROWAVE MULTIBOILER DEVICE** - Figure 10 (Cross-section - scale=1:1), according to claim 1, characterized for *enabling multiple function of coffee, milk and tea liquid boiler, in an device with cover, without external spillage, even after continuation of boiler in a predetermined time.*

3°) **MICROWAVE MULTIBOILER DEVICE** - Figure 10 (Cross-section - scale=1:1), according to claims 1 and 2, characterized for operating through microwave oven.

4°) **MICROWAVE MULTIBOILER DEVICE** - Figure 10 (Cross-section - scale=1:1), according to claims 1, 2 and 3, characterized in that it may be intended to act as a *multiboiler*, and further to be used to *serve* the final product to be consumed *up to the table, with the same device.*

FIGURE 1

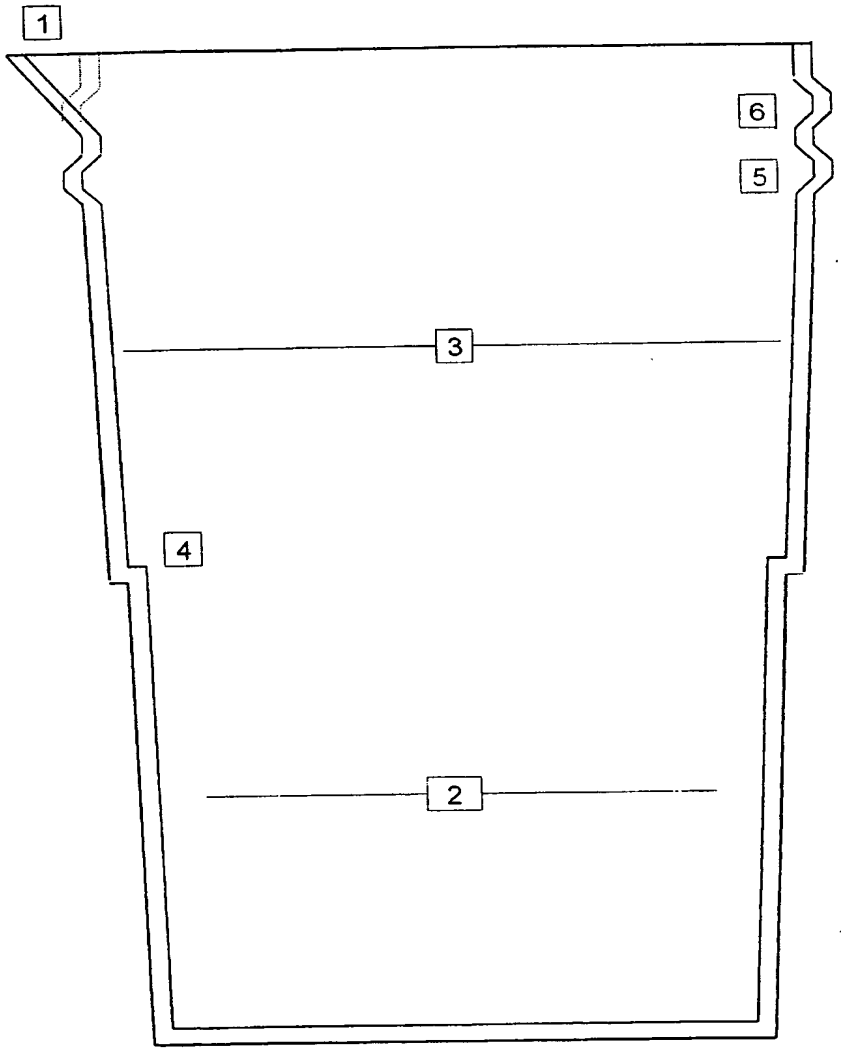


FIGURE 2.1.

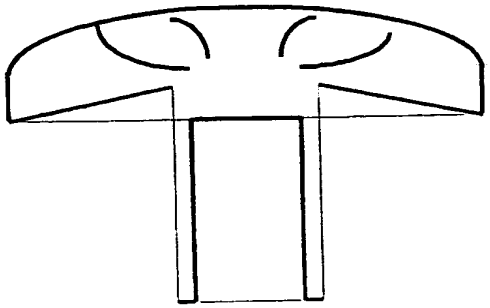


FIGURE 2.3.

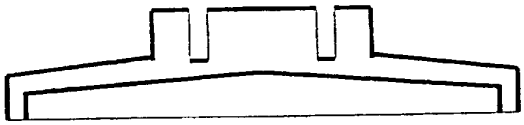


FIGURE 2.2.

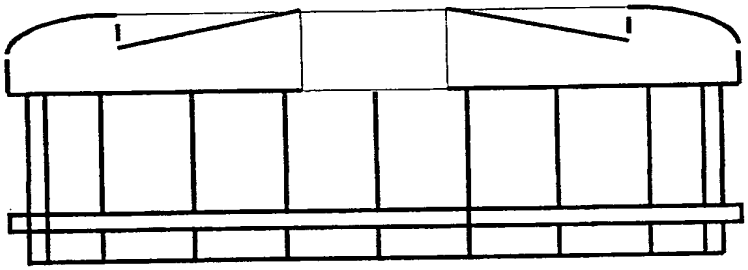


FIGURE 2

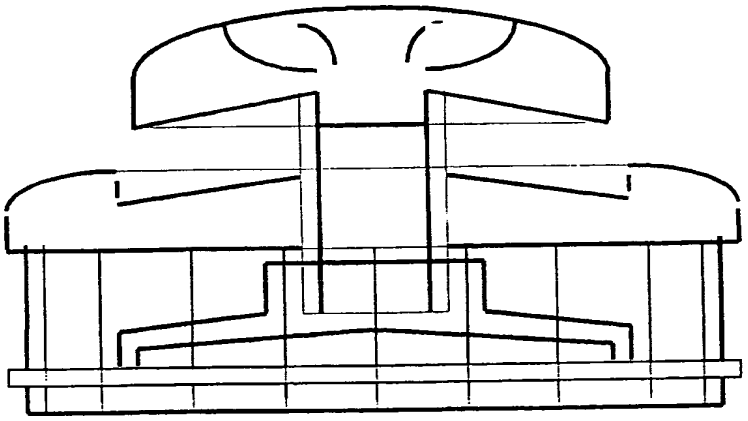


FIGURE 2.1.

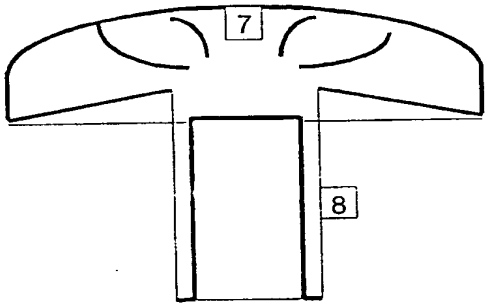


FIGURE 2.1.1.

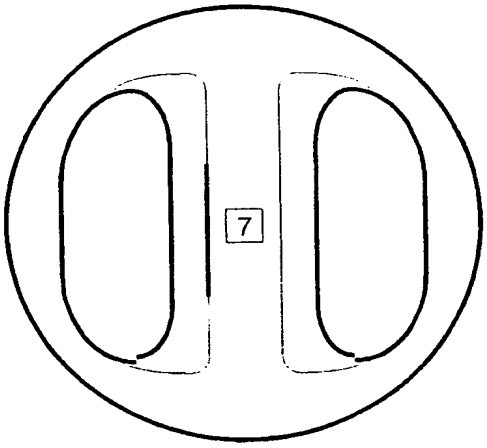


FIGURE 2.2 .

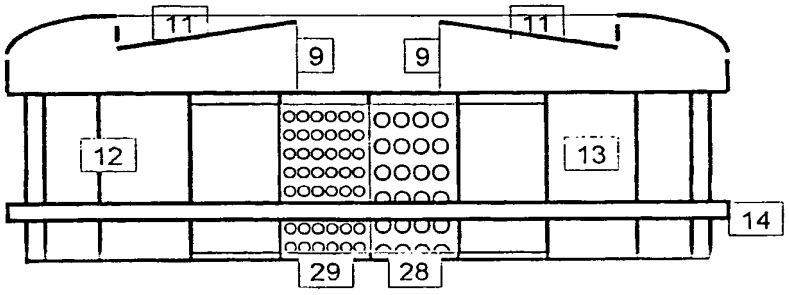


FIGURE 2.2.1.

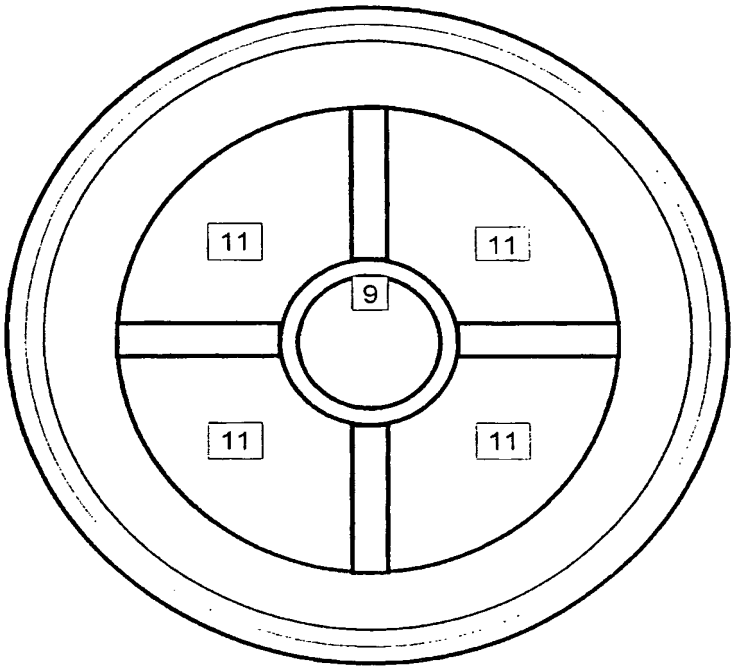


FIGURE 2.3.

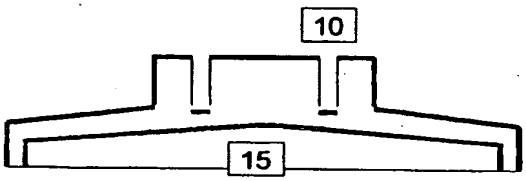


FIGURE 2.3.1.

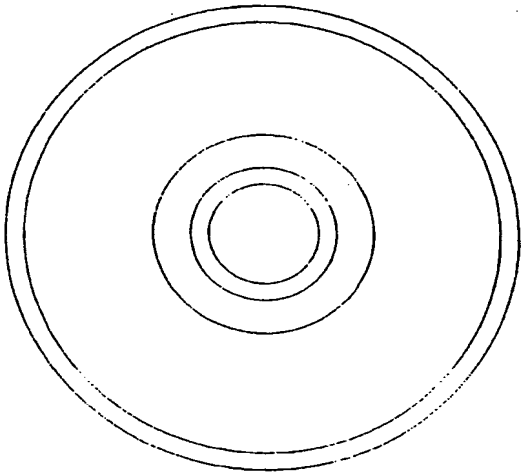


FIGURE 3.1.

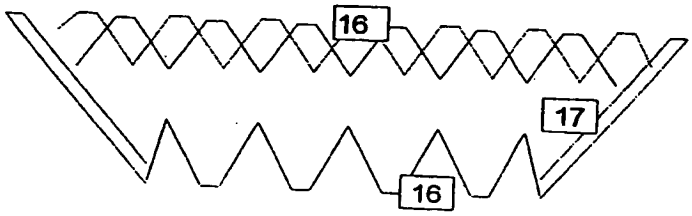


FIGURE 3

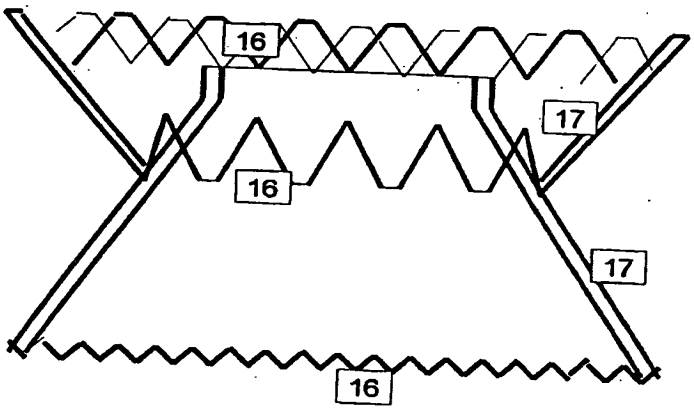


FIGURE 3.2.

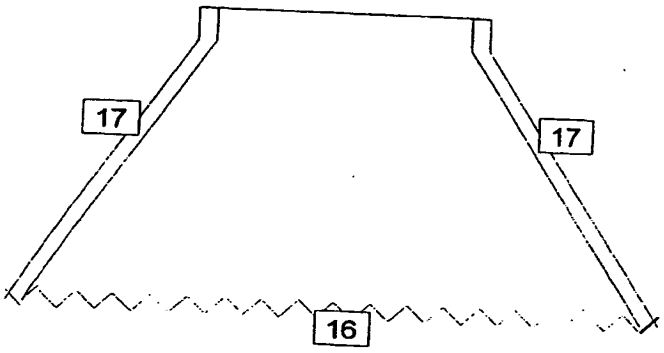


FIGURE 4

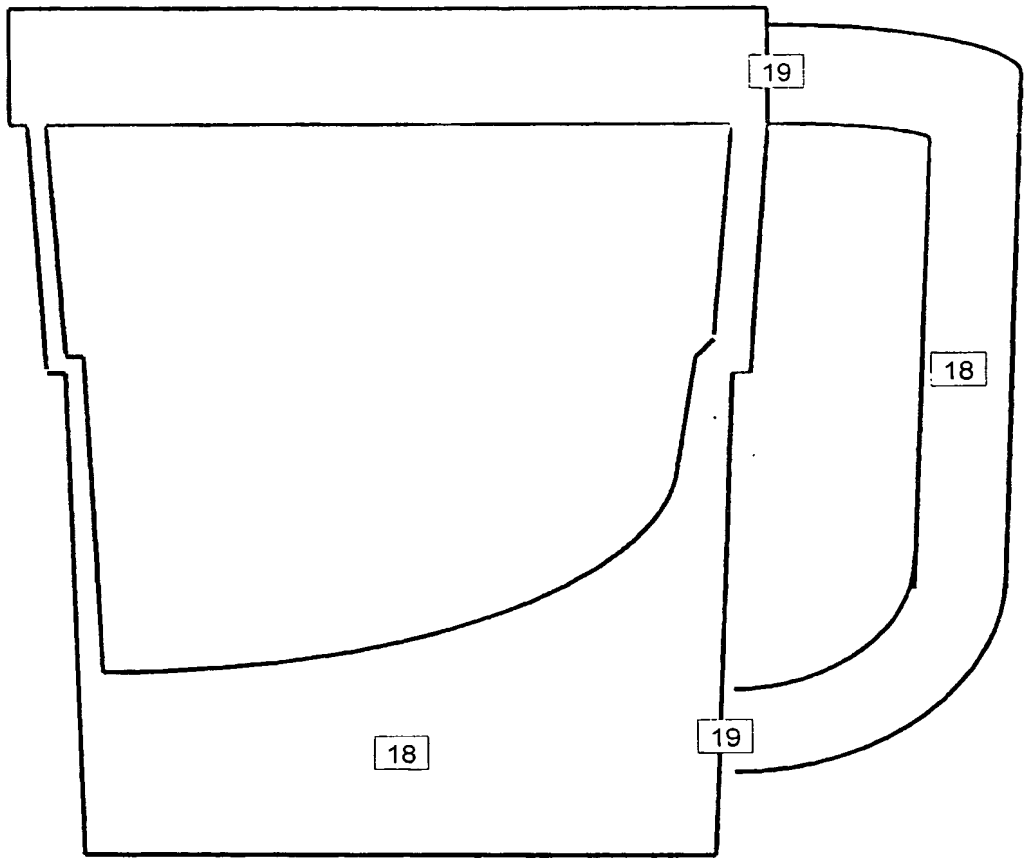


FIGURE 5

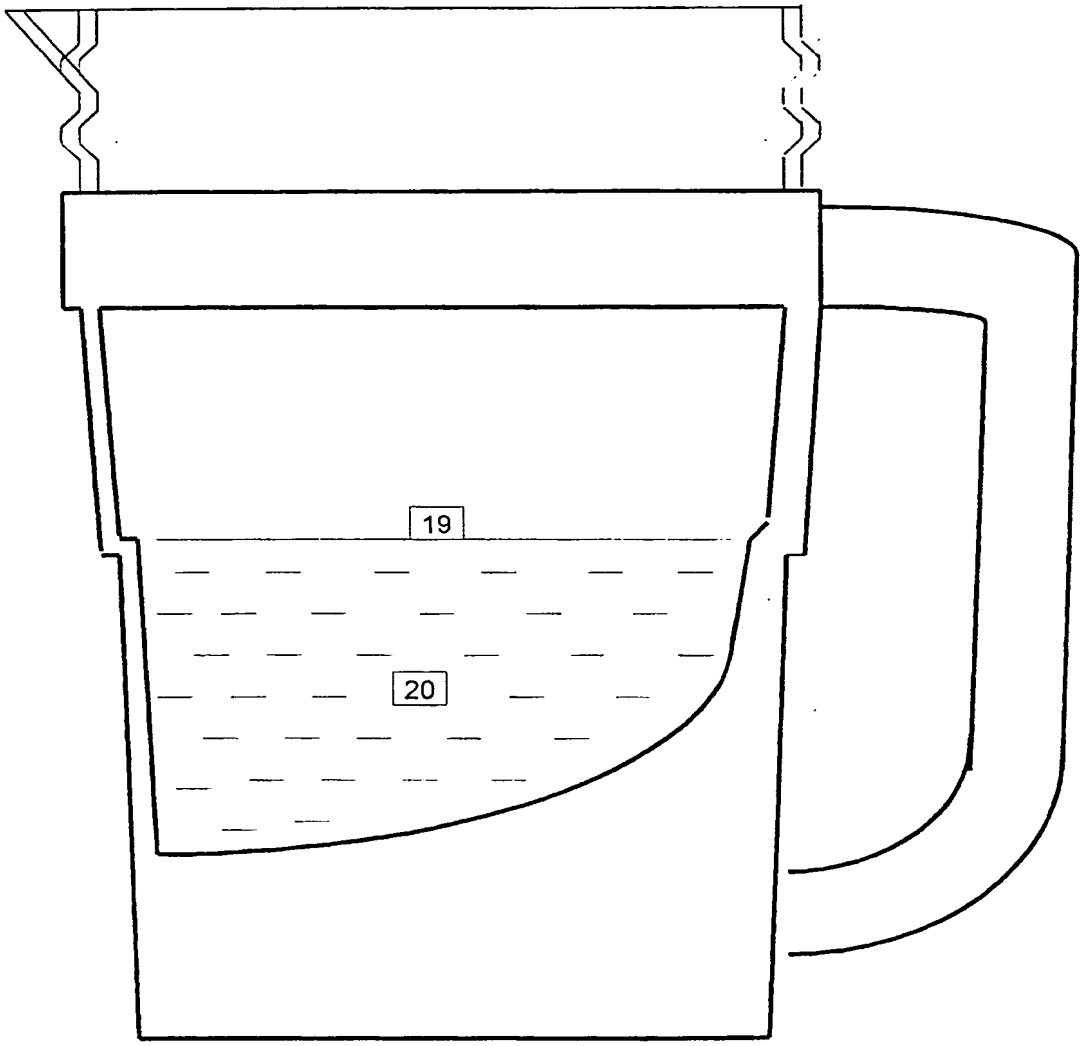


FIGURE 6

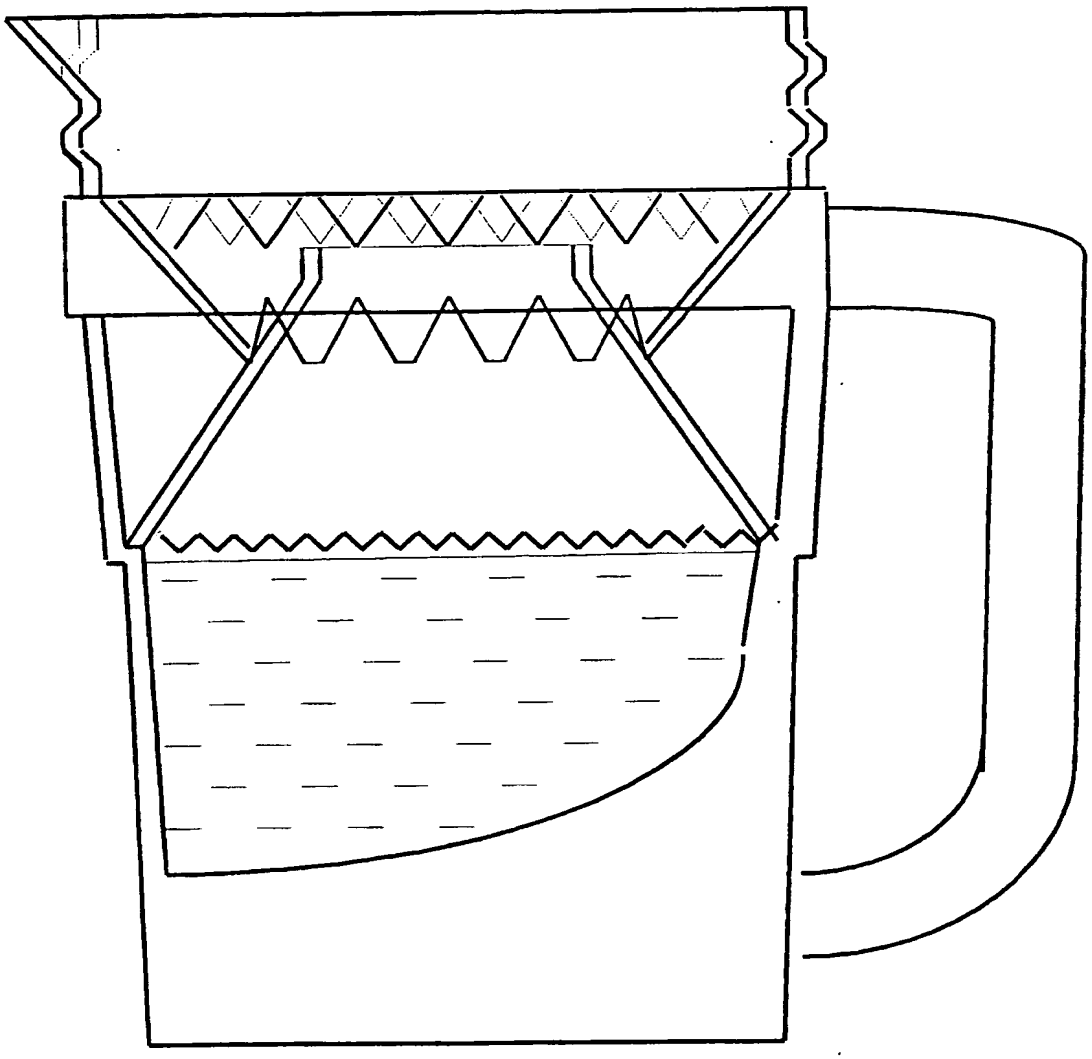


FIGURE 7

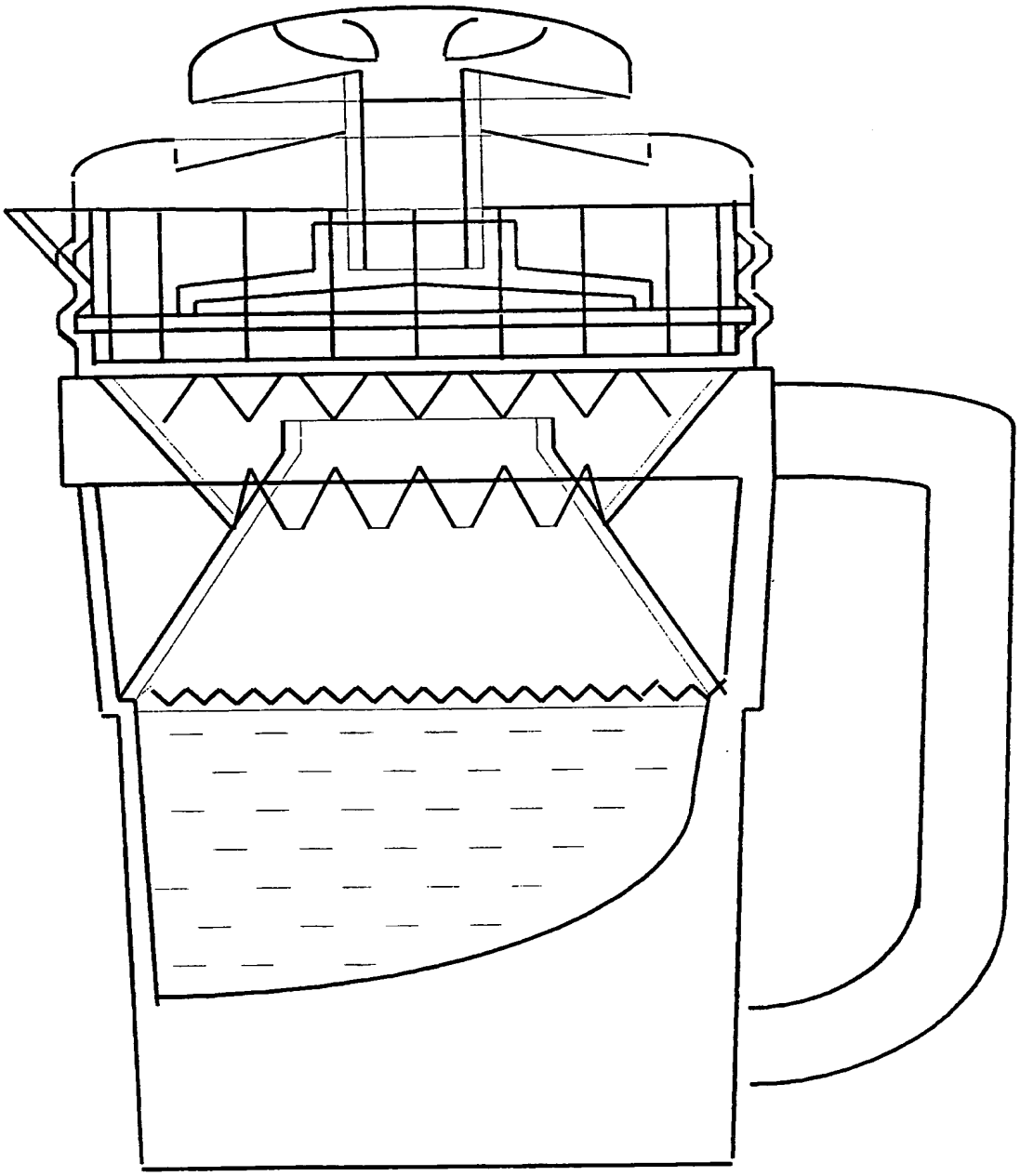


FIGURE 8

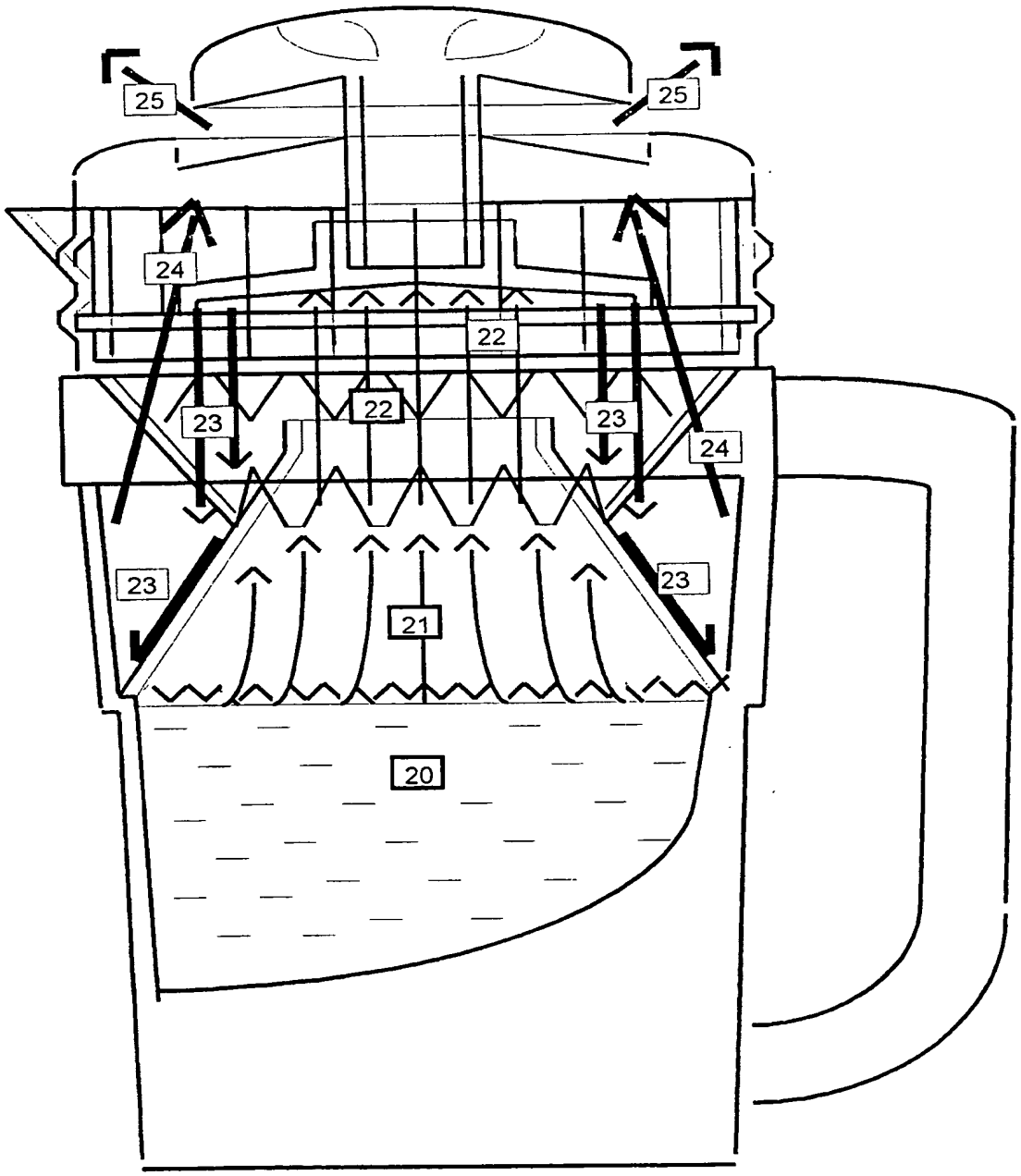


FIGURE 9

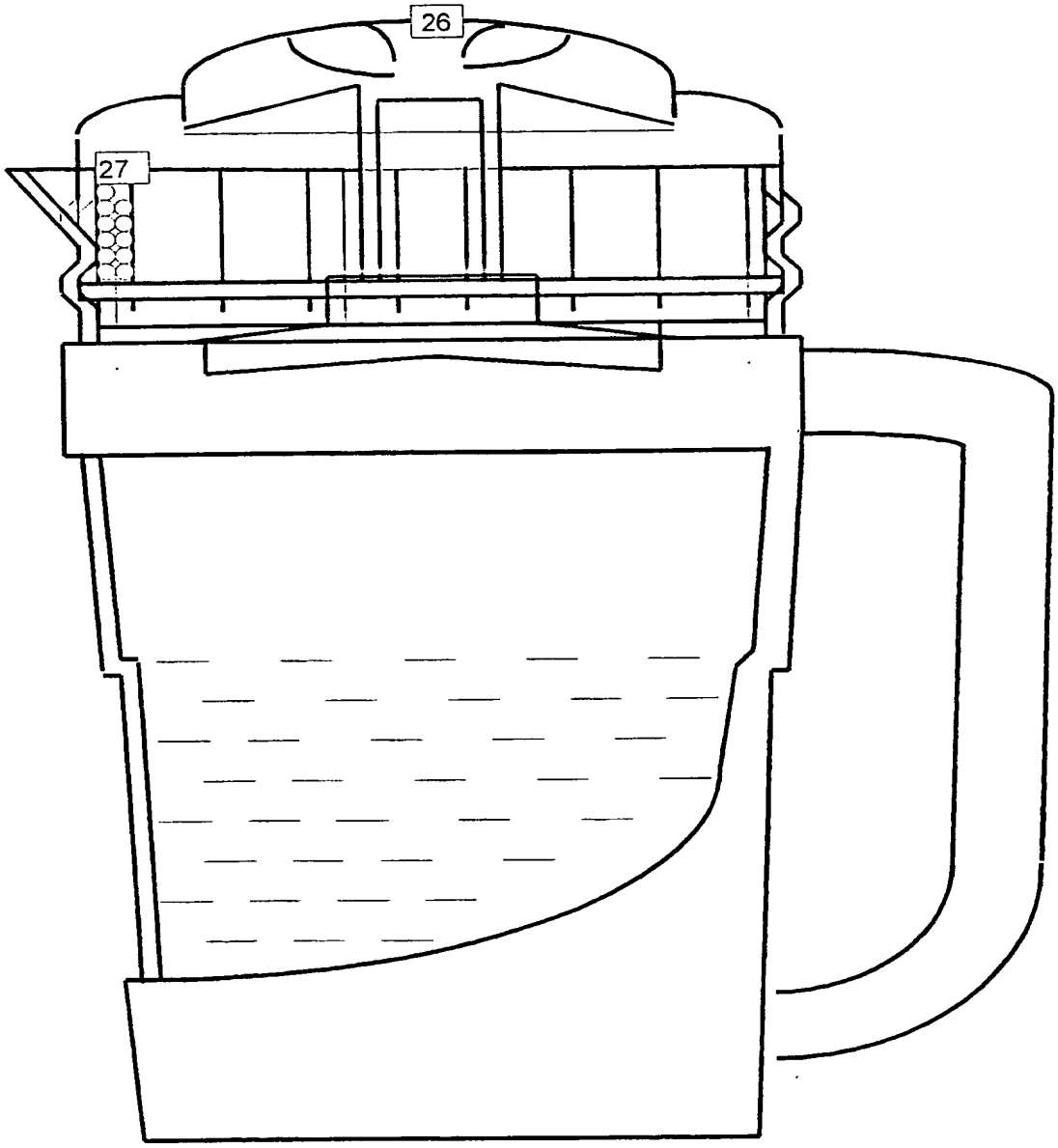
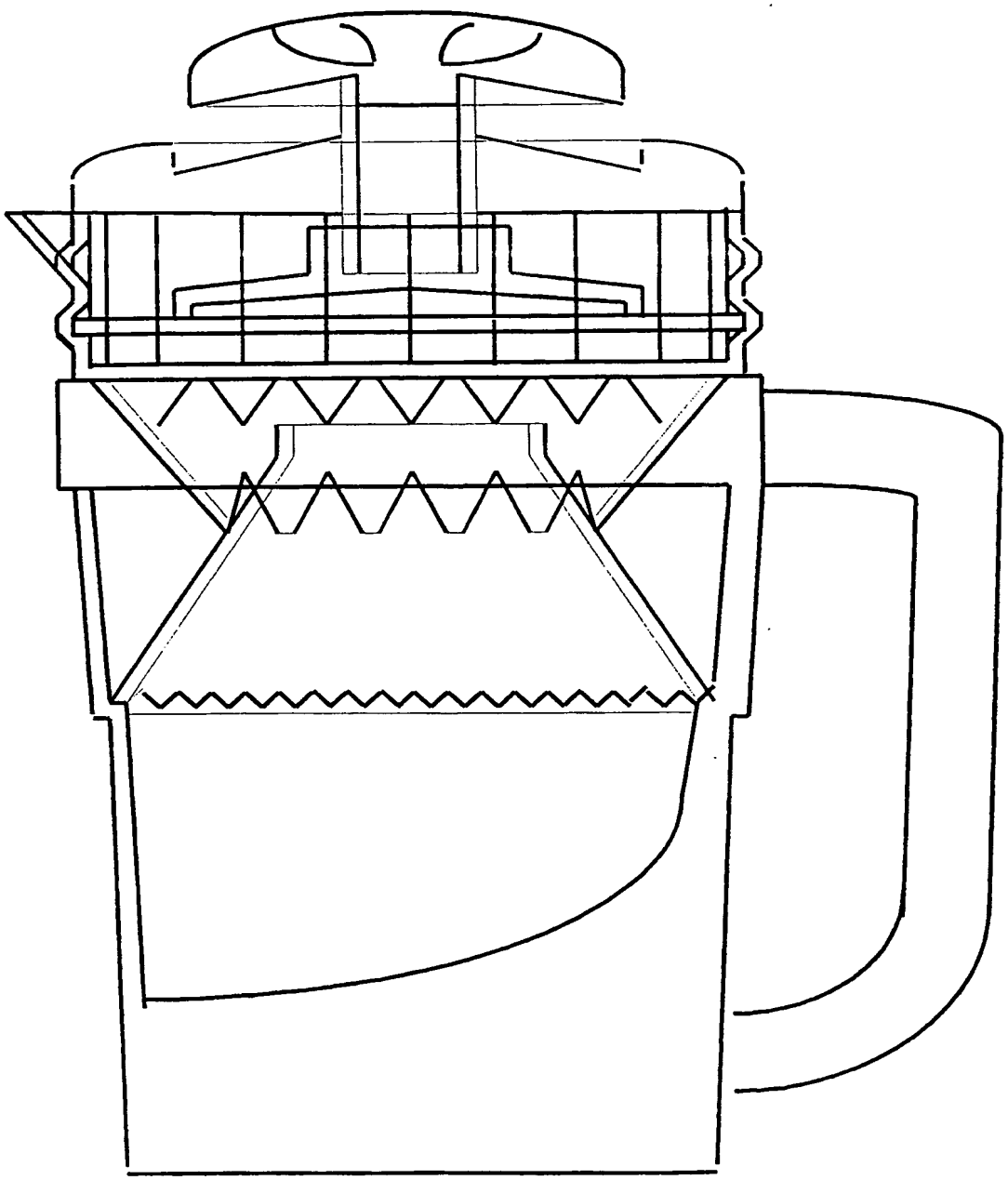


FIGURE 10



INTERNATIONAL SEARCH REPORT

International application No.
PCT/BR 00/00114

CLASSIFICATION OF SUBJECT MATTER

IPC[7]: A47J 27/56, 27/58

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC[7]: A47J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPODOC, WPI, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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2 February 2001 (02.02.2001)	27 February 2001 (27.02.2001)
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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JP A2 4108413	09-04-1992	none	
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